THE AMERICAN ARCHITECT AND BUILDING NEWS.

VOL. II.] Copyright, 1877, JAMES R. OSGOOD & Co. [NO. 103.

BOSTON, DECEMBER 15, 1877.

CONTENTS.

SUMMARY:—
The Philadelphia Public Building.—The Washington Monument Society.—Gen. Butler's Automatic Fire Signal Bill.—The St. Louis Custom House 397
THE WASHINGTON MONUMENT 398
ANTI-FIRE CONSTRUCTION 399
THE ILLUSTRATIONS:—
College Building at Colorado Springs.—Street in Lillebonne.—Old Inn, New Jersey.—A Rustic Shelter on the Palisades.—House at Baltimore, Md. 400
SOME FEATURES OF THE DUTCH FARM-HOUSES OF NEW JERSEY . 401
CORRESPONDENCE:—
Letter from New York 402
PALESTINE EXPLORATIONS 402
TESTING COVERINGS FOR STEAM-PIPES 402
COMMUNICATION: Mahan's Industrial Drawing 403
THE AMERICAN INSTITUTE OF ARCHITECTS 403
NOTES AND CLIPPINGS 403

THERE seems to be a good deal of confusion in the minds of the people of Philadelphia as to what shall be done with the new Public Building. So long as the times were prosperous and taxes did not weigh heavily, they seemed on the whole to look on the building with complacent admiration, and to take pride in its splendor; but now that they are under financial oppression, the hostilities which its beginning provoked come to the surface again. One paper argues for abolishing the contract with the Messrs. Struthers, another for abolishing the Commission, and still another for abolishing the building itself. It looks as if the city had burdened itself with an oppressive undertaking; but it is agreed that a new building of some kind is indispensable; and to give up even a costly and magnificent one which has reached its second story, and begin again, would seem to be the poorest of economies. The Commissioners are accused, perhaps with reason, of having made an extravagant use of the money which they could draw without responsibility to the city. We have not seen however that there is any reason to charge them with not having used it honestly; and to throw away what they have done looks to an outsider like outdoing them in extravagance. We do not suppose there can be any real danger of this. Apparently the Commissioners had pressed their power inconsiderately in urging on the work against the general opposition and the lessened means of the tax-payers; and the contract which allows the Messrs. Struthers to force upon the city three millions' worth more of marble, whether the city can afford to use it or not, is doubtless an oppressive one. For a great city to try to wriggle out of an obligation because it is a burdensome one, is however not edifying, and we do not believe it will be done. The difficulty cannot occur again, for the courts have decided that under the new constitution the Commissioners can make no more contracts in advance of the appropriations. The course of a private citizen under like difficulty would undoubtedly be, provided he were not bankrupt, to arrange with his contractors to carry on the work at such rate of progress as he could afford, or else, paying them an indemnity for delay, to protect the work already done, get it into shape for such use as it was already fit for, and await better times; to this it may be presumed the Philadelphians will ultimately make up their minds.

AT a recent meeting the Washington Monument Society appointed a committee to urge on Congress a joint resolution empowering the commission, which was appointed last year, to begin work on the monument, and to spend the money which has been appropriated in any way they may find necessary,—in strengthening the foundations, for instance, if that is required. The Society also passed a resolution to the effect that since the people of the country had been duly advised of the design of the monument, and had voluntarily subscribed between two and three hundred thousand dollars to build it up to 174 feet, it would be bad faith now to depart from the first plan; and that they "cannot sanction any change except on the highest necessity and for the most substantial reasons." In another part of this paper we have given our reasons for saying that this notion is entirely untenable; but in any case, if it were really a question between bad faith and a bad monument, we should say that it was best to leave the Association to work out its own deliverance, and that Congress should decline to give its casting vote and the nation's money in favor of the monument. The principle of the furthering of private undertakings in Congress is objectionable at the best; and if the Government lends its hand to a Washington Monument, as it has been promising to ever since the Government began, it ought to be to one over which it had entire control, untrammelled by any good or bad faith to subscribers. Of course the real reluctance of the Society comes from attachment to their first—or rather to their already greatly modified—design. But if they fail to convince Congress, and can be led to see that the people of the country are really not interested in the thing as it stands, they may come to consider these facts as reasons substantial enough to sanction a change. A drawing by Mr. Mead of his proposed modification was shown to the Society, and received "their undivided praise." It eclipses all other designs yet proposed, we are told, which is perhaps not improbable, since the drawing, as the *National Union* naïvely says, "is about ten feet in length, and cannot fail to meet the approval of all." We need not infer, however, that even a drawing of these dimensions will yet be considered as substantial reason for a change. The Society sustain their own design by resolving that a massive obelisk without ornamentation is entirely consistent with the simple, unostentatious, and republican character of George Washington; but this hardly proves enough. No doubt an obelisk is consistent with Washington's character, and so, we may say, are a pair of cavalry boots; but it would be possible to find a form equally consistent, which would be better suited for his monument than either.

A BILL has been presented to the House of Representatives by Gen. Butler for the protection of records and other property exposed to danger of fire in public buildings. It provides that the head of the Department in charge of every such building may put into it "an automatic signal telegraph of such improved kind and description, adopted and now in public use, as is fitted and adapted to transmit signals of fire by means of an unusual degree of heat." It appoints the Commissioner of Patents, the Supervising Architect of the Treasury Department, and the Secretary of the Smithsonian Institute, a commission to examine whatever kinds of signals may be offered, and select one for the use of the Government. No doubt such appliances would be of value in public buildings, and would supplement the vigilance of the watchmen who patrol them, so long as they remained in order, though they would be less important than in private buildings where there are no watchmen. But as the New York *Times* wisely says, "What is most urgently needed is a law that will make the occurrence of fire in public buildings comparatively impossible." The *Times* calls attention to the fact that among the unsafe places is the Document-Room of the House in the Capitol, which is between the old Hall of Representatives and the Congressional Library. It has just been proposed, it says, to shelve the Document-Room with iron, for the safety of the papers; but Mr. Clarke, the architect of the Capitol, declared that the wall of the old Hall, against which the shelving was to be built, was itself only a lath-and-plaster partition. We see no proper reason, by the way, for the introduction of the phrase, "adopted and now in public use." The adoption of automatic fire-signals is a very recent thing; what if other kinds should presently be invented which should be better than any now in public use?

THE evidences of fraud which come out in the trial of the contractor for the stone-work of the new Custom House at St. Louis are important enough to deserve mention. The granite piers of the building were specified to be of solid stone; but examination by the inspectors appointed to inquire into the condition of the work shows that they are shabbily scamped. The piers have been examined by drilling into

them; and the inspectors testified that there were large cavities in them, filled only with spalls and grouting. It is impossible by means of boring to determine the exact condition of the piers without fairly riddling them with holes enough to make them insecure; but apparently enough has been found to show that the contractor is liable for fraud. A filling of chips and mortar was found in most of the piers within from ten to fifteen inches of the surface. The testimony of the inspectors is that the piers are not safe to build upon, and that more than half of them — and there are a hundred — are filled with concrete. The Superintendent, Walsh, and Assistant Superintendent Patrick are under indictment by the Grand Jury for conspiracy with the contractor to defraud the Government. The first information for the Government was got, it is said, from discharged workmen. The superintendent has protested innocence, and impugned their testimony; but the witness of the boring is damaging. The case illustrates, among other things, the difficulty of maintaining an efficient system of supervision over work at such a distance from the central office.

VISITORS to the Centennial can hardly have helped noticing what a surprising number of attractive things bore the placard, "Purchased for the Pennsylvania School of Industrial Art," and thinking that the school would have rather a magnificent collection when it was finished. The school has been a good while organizing, but has only lately announced the opening of its courses, which are to begin at Philadelphia on the 17th of this month. It proposes to give instruction in the principles and practice of design as applied to manufactures, both by systematic class instruction, which will be extended to special industries by competent teachers, and by lectures, all of which will be illustrated by its collections. Students are to be admitted on examination, and the instruction is to be free; they will be kept busy for five days in the week, there being two hours of instruction in the morning, and two hours in the evening, with time reserved for practice between. Mr. Charles M. Burns, jun., of Philadelphia is to take charge of the instruction in matters of art, and Mr. Philip Pistor, from the Zurich Polytechnic School, of the scientific teaching.

THE WASHINGTON MONUMENT.

WE are glad to see that some one whose advice will probably command official attention, if not official deference, has given his opinion concerning the accepted design for the Washington Monument. Mr. W. W. Story has appeared, it is said, before the Congressional Committee on Public Buildings and Grounds, and has presented a new design, of which the committee has asked him to submit a model. Of the circumstances under which Mr. Story was invited to present his design, or of the character of it, we hear nothing; but any thing that fairly opens the question of a change of programme is likely to be of service. The President's recommendation concerning it, in his message, took for granted the carrying out of the first intention, and urged Congress to authorize the use of the subsidy voted last year for strengthening the foundations. It is quite likely that the President, like most other people who are interested, has never seriously considered whether the design is worth carrying out or not. Nevertheless this question is extremely important. The monument will be the most conspicuous in the land. It is a project that has been before the country in one way or another ever since the death of Washington. It was finally undertaken by private persons, with a zeal which we must admire, but under very inauspicious circumstances so far as its design was concerned: it has been at a stand-still for several years; and now, in the face of considerable distrust of its actual safety, to say nothing of its architectural propriety, Congress is urged to vote money to continue it. If it should prove to be the general opinion of those who are best qualified to judge, that the design is unworthy, it would be a misfortune to have the money given. It would appear that the present interruption was most opportune for considering whether the monument deserves to be finished at all. If we build a bad one now, it is not likely that we shall ever build a good one, for the bad one will forever block the way; and it is much easier to build a bad monument than people seem to imagine. An undertaking which may be a perpetual honor or a perpetual shame is too serious to be taken up in haste as a foregone conclusion; and now is the time for the Government to carefully consider whether it is called on to commit itself to a worthy scheme. To set aside the product of so much labor and expenditure as unworthy, is not a thing to be done without regret and careful consideration; but if it is unworthy, it ought to be set aside, for to complete it would be a national wrong.

The objection has been made to a change of design, that it would thwart the intentions of the original contributors, who gave their money for this and not for another. The scruple is honorable, but inconsiderate and unreasonable. In the first place, it subordinates the greater consideration to the less. The real excellence of a great monument that will be an example for ages is far more important than the individual preferences of those who subscribed to it. But the original subscribers, or their successors, have never expressed any preference for the accepted design: their opinion was never asked. They took the design as it was presented, and made no questions; giving for it simply because it was the Washington Monument. If they liked the design, there is not the smallest reason to consider it preferred, or to believe that they would not have liked another if it had been shown them. Moreover, the present design is not that for which the old subscribers gave their money. Its character has been entirely changed by stripping away what was essential to it. The only thing, except its bad proportion and its dimensions, which distinguished it from other dissected obelisks, — or from the other, for we are not sure that more than one such exists, — was the colonnade, or "Pantheon," about its base. The monument is better without this, certainly; but its identity is already gone.

There is another way of looking at it. It has been said that the contributors have a "vested right" in the monument, and that Congress or the Association have no right to change it. Now either the monument is a public one, or it is a private one. If it is a private one it belongs to the subscribers, and Congress ought to have nothing to do with it. In this case it is impertinent to ask them to subsidize it. The Association succeeds to the rights of the former contributors, is responsible to no one; and what it does with the design of it is a matter not of obligation but of sentiment. In this case appeals for State or for national aid or to the people of the country are out of place, and the people are only concerned with it as it is obstructive, blocking the way by doing badly what the nation ought to do well. If it is a public one it belongs to the people of the United States, and the right of individuals is merged in that of the people. The life of the people is continuous; it is the same people that it was last year or a generation ago, in spite of changes among the individuals that compose it: it is bound by the same laws, contracts, and obligations, except so far as they have been abrogated, but it is in no wise bound by its past opinions. There is on this ground as much obligation and no more to retain the form of the monument as there is to retain that of an inconvenient or unsightly post-office, because it was built with the money of a generation ago. Congress is besought and popular aid invoked, we take it, on the ground that the monument is the undertaking of the people. In this view the Association are the agents of the people, and are responsible not to individuals who have died or to any individuals, but to the general sentiment of the people as it is to-day. To-morrow they will be responsible to the people as it is to-morrow. The feeling of responsibility which is urged as a reason for not changing the design of the monument would find its more fitting exercise in ascertaining what the public, of whose money it is now proposed to secure an appropriation, would really prefer, or else of securing on behalf of the public the best thing that can be had.

But if the Washington Monument is actually a private undertaking, managed by certain irresponsible individuals, who are bent on carrying out their own notions, — a perfectly intelligible condition of things, of which we should have no right to complain, — this ought to be generally understood; and Congress ought to be let alone, and to leave them to finish their monument in the best way they can. It is no case for government interference, unless as the Government chooses to resist the defacement of its Capitol. The propriety of the nation's building a worthy monument to its first president

still remains, and an unsuitable private undertaking ought not to be allowed to interfere with it. The public ought, in that case, to understand that their assistance is not solicited for a great national undertaking, but to carry out certain private wishes, which unquestionably are not now those of most people who have given any sober and interested thought to this matter. At present we see no evidence of any serious effort on the part of those who have charge of it to do what befits the occasion, — that is, to determine by careful consideration what is the best monument that can be put up; but only a persistent effort to force a predetermined scheme in the face of a public feeling that has greatly changed. In all the efforts that have been making these many years since first Robert Mills's crude design was accepted for want of a better, with all the money that has been spent, and the study that the Government has given to the condition of the monument, and in spite of the appropriation which Congress has once voted, there has never been any considerate effort to fix a suitable form for what ought to be and what was intended to be the noblest monumental work of the nation. We do not believe that there is any intelligent general interest in the present design whatever. The greater part of those who have seen it have doubtless accepted it as a matter of course, as they do the prescriptions of their physicians, and as they would have accepted any other design of sufficient pretence. Certainly the whole body of persons who are by profession best qualified to judge of it, the architects and other artists of the country, are united in its condemnation; and cultivated laymen who have given it any careful consideration are agreed with them. The general apathy with which it is regarded has made it necessary for those who are carrying the burden of this ill-considered project to beseech Congress to help them bear it; and there is danger apparently, that for want of an efficient protest, Congress may be persuaded. Once committed to it, the Government might find it difficult not to assume its completion. To have the monument built in a form that would be positively distasteful to the better-informed part of the community, and in which the rest could take no intelligent interest, would be a calamity. It is a thing in which every public-spirited American ought to feel an interest. We do not see how it is possible to arouse an interest, unless by such a conspicuous and carefully-considered effort to obtain the best design for it as shall in itself forestall interest by attracting public notice and eliciting public opinion. At present the nation has no interest in it, because no pains has ever been taken to make it worthy of interest. The original designer put less thought into it than went to the contriving of any other great building that we can think of; and all the effort spent on it since has been to get money.

ANTI-FIRE CONSTRUCTION.

[A paper read at the recent Convention of the American Institute of Architects by R. G. Hatfield, F.A.I.A.]

ONE of the indispensable requirements of architecture is stability, — permanence. And yet of all the buildings ever erected, how few still remain! Even that achievement of engineering skill, the Eddystone Light-house, which has bravely resisted the power of the Atlantic for one hundred and twenty years, is at last undermined and must fall. The elements in their unceasing action sooner or later triumph over the proudest works of man. Of the elements at work in this destruction, there is none so active, so successful, as fire. With what fiendish relish does it lick up the combustible, and ruthlessly tumble the residue in shapeless ruin! History teems with its work of desolation. The cities of the Old World have all sadly suffered by its ravages: I will refer to one of them.

The great fire of London, in 1666, burnt for three days, destroying 13,200 houses, including many fine public buildings. The loss by this fire, if computed by present values, would amuont to at least $100,000,000.

The city of New York has suffered by at least three great fires. One in 1835 destroyed 600 warehouses, which together with contents were worth $20,000,000. Another in 1839 destroyed property to the amount of $10,000,000; and a third in 1845 destroyed 300 stores and dwellings, valued at $3,000,000. Charleston in 1838 suffered by a fire which destroyed 1,158 buildings, covering 145 acres. Pittsburgh, in 1845, lost by fire 1,000 buildings, valued at $3,000,000. Albany, N.Y., some years since lost in steamboats and buildings $3,000,000. St. Louis, in 1849, lost $3,000,000 in steamboats and buildings. Philadelphia, in 1858, lost 300 houses. In 1845 two-thirds of the city of Quebec, comprising 2,800 houses, were swept away by fire. The city of St. John's, Newfoundland, repeatedly damaged by fire, was nearly all destroyed in 1846, when 6,000 people were rendered homeless. Troy suffered severely in 1862. Portland, in 1866, lost $9,000,000, including the loss of 1,600 buildings. Chicago in 1871, and Boston in 1872, were devastated to the extent of more than $200,000,000; and quite recently a devastating fire has almost entirely destroyed the city of St. John, N.B. But these marked fires do not alone measure the work of destruction; much is due to the smaller fires, which make up by their frequency what they lack in proportions. Constantly at work, little by little, year by year, the aggregate of ruin they accomplish is fearful.

A record kept by the New York *Insurance Chronicle* shows that the loss by fire in the United States and Canada in 1876 was $75,000,000, and in the previous year it was $86,000,000. This record is doubtless trustworthy, as far as it goes; but I am assured by competent authority that the loss during the last ten years has not been less than $100,000,000 per annum, not including the two extraordinary fires of Chicago and Boston. What a fearful havoc! Is there no remedy?

The losses in the United States and Canada during the last twenty-five years aggregate an amount which would have sufficed to have rendered all the buildings approximately fire-proof. A few figures will show this. The United States census for 1870 gives the value of the real estate of the country, but not the value of the buildings alone. This, however, may be approximated. From an estimate made upon the property within certain limits of the city of New York, the value of the buildings was found to exceed considerably the value of the ground built upon. The buildings in the rural districts, however, are of much less value than the land, perhaps not half. A fair average for the two — city and country — would perhaps be one-third the value of the real estate. The census for 1870 puts the value of the real estate at about $9,900,000,000, one-third of which, $3,300,000,000, then, is the value of the buildings.

This result may be tested by estimates upon another basis. It is shown in the last report of the National Board of Fire Underwriters, p. 27, that the insurance effected during the last five years averages about $5,170,000,000 per annum; and it is shown by the records of the New York *Chronicle* that not more than half of the losses by fire are covered by insurance: hence the $5,170,000,000 insured is only half of the insurable property of the country; or, the value of the property of the United States and Canada, liable to loss by fire, is not less than $10,340,000,000. This is the value, not of the buildings alone, but of the buildings and their contents. To ascertain what portion of this is invested in buildings, it is shown by the New York Board of Fire Underwriters in their last report, p. 23, that in an average of the losses for the past eighteen years, the portion on buildings was about one-third of the whole. Taking this as authority in the matter, one-third of $10,340,000,000 is $3,447,000,000 for the value of the buildings in the United States and Canada, which cannot be far from $3,300,000,000 for the United States alone, as before shown.

Of the $100,000,000 annual loss, one-third may be taken as that which was invested in buildings; and, had the buildings been of a character to resist the flames, a large part, perhaps two-thirds, of the loss upon their contents would have been saved: thus $\frac{1}{3}$ in buildings and $\frac{2}{3}$ of $\frac{2}{3}$, or $\frac{4}{9}$ of the contents, or together $\frac{7}{9}$ of the whole loss, could have been avoided by having more perfect buildings; or, of the $3,447,000,000 invested in buildings, there is an annual loss of nearly $78,000,000 due to deficiencies in buildings. This is more than two per cent of the value of the buildings, an amount which would in twenty or twenty-five years be ample to render all our buildings approximately fire-proof, and would not only save more than three-fourths of the present loss in material, but that also which is caused by interruption to business; and, in many instances, avoid the loss of life, and consequent distress to survivors.

Painful instances of loss of life by fire through deficient buildings are still fresh in our memories. The Brooklyn Theatre and the St. Louis Hotel cry aloud for reform in building. Whatever may be said of the inexpediency of expending money upon ordinary buildings to avoid damage by fire, there certainly is no good reason why, at whatever cost, places of public resort should not be made safe. As life is more precious than money, so no money should be considered wasted which is required to protect life. It was lately shown in the Chicago *Investigator*, that no less than 156 theatres have been burned in the United States since the year 1800; and of these 119 were burned since 1850. Similar statements, though perhaps not quite so disastrous, might be made of hotels and other public buildings. The government of a country should be held responsible for life sacrificed in this manner, as well as for that of those who die by neglect of sanitary precautions. The owners of buildings of public resort should be compelled by rigid law to render their property secure from destruction by fire.

In the construction of buildings, the materials most in use are brick, stone, iron, and wood. Brick above all the others is that which possesses fire-resisting qualities in the largest degree. It has been in use from the earliest ages; it is prominent among the materials of ancient buildings. The Pantheon, the only entire ancient building of Rome, is of brick. The marble with which the brick walls were incrusted has long since disappeared. The metal which covered the roof was stripped off for other use. The only

opening for light, the eye of the dome, nearly thirty feet in diameter, has been uncovered, exposing the interior to every storm; and during the nineteen centuries of its existence, it has been subject to repeated conflagrations resulting from the wars which so often desolated Rome; and yet, through all these vicissitudes, the Pantheon still remains in such good condition that it serves as one of the churches of the city. Its durability, however, is due not alone to the character of the material of which it is constructed, but also to its form, the strongest known, a cylinder.

Stone, though inferior to brick, is far superior to iron in its fire-resisting qualities. Granite when exposed to intense heat will crack and splinter freely; marble is quickly reduced to lime; sandstones disintegrate: only those stones which are of volcanic origin may be safely trusted in the fire.

The extensive use of iron as a material of construction is of recent date. Fifty years ago it was but little used. One of the principal reasons for introducing it was its fire-resisting character. Gwilt, in his Encyclopædia, p. 494, art. 1767, edition of 1842, in speaking of iron says, "The security afforded, not only for supporting weight, but against fire, has of late years very much increased the use of it, and may in many cases entirely supersede the use of timber." The experience of recent years however, especially at Chicago and Boston, has materially lessened confidence in its fire-resisting character. Indeed, its power to sustain weight when subjected to great heat has been shown to be quite limited. It is capable of sustaining, in an intense fire, neither compressive, tensile, nor transverse strain, to any useful degree. Its untrustworthiness was shown at least two hundred years ago; for Evelyn says of the great fire of London in 1666, "The vast yron chaines of the Cittie streetes, hinges, bars and gates of prisons, were many of them mealted and reduced to cinders by ye vehement heate."

To protect hollow iron columns it has been proposed to secure the passage of a current of air through them. An experiment to test this was made upon a 1½-inch pipe which was subjected to heat at the middle while a strong current of air was maintained through it. It was pulled apart by hand in four minutes after the fire was applied.

All metals transmit heat rapidly, — a fact which may account for the rapid loss of strength in iron when subjected to fire. If iron be used for floor-beams, arch-ties, or for posts, or for any purpose which exposes it to strain of any kind, it should be protected by an incasement of some slow-conducting material, such, for example, as brick, terra-cotta, or gypsum; although this latter material is active in rusting iron, and therefore should not be allowed to come in contact with it. Where gypsum is to be used, a good coat of lime-whiting previously applied to the iron will protect it from the action of the plaster. Mr. Hornblower, architect, of Liverpool, has patented a system of protection to iron beams by means of earthenware jackets and concrete; and Mr. P. B. Wight of Chicago, Fellow of the Institute, has patented a system of protection to iron columns by an enclosure of plaster and other fire-resisting material. These and other systems of protection are just so many concessions to the now well-established fact, the non-fire-resisting character of iron.

Of the four principal materials used in construction, wood is generally supposed to be that which has the least power to resist fire. This idea in general is correct, and yet under certain circumstances wood will resist fire longer than iron. Firemen are reluctant to enter a building on fire when it is known that the supports are of iron, yet do not hesitate where they are of wood. This apprehension of danger from iron supports, the growth of experience, plainly proves the superiority of wood over iron as to a fire-resisting quality.

A floor of wooden beams placed apart in the usual way has but little fire-resisting quality. The fire, aided by a free current of air between the beams, rapidly consumes them as so many pieces of well-placed kindlings. This defect in the construction of wooden floors has led to various devices, one of which is the use of plaster or gypsum, which is thickly spread upon the lathing at the bottom of the opening between the beams, and also extended up on each side. This forms a good filling, effectual in preventing the draught of air; but it has been found to induce rapid decay of the timber, and is therefore a failure.

In the use of ordinary deafening, concrete, plaster, or any similar filling, it is requisite to increase the size of the floor-timbers sufficiently to sustain safely the weight of this filling. The fillings above named are a dead weight upon the floor. If some filling be used which would sustain itself, such for example as wood, or if the intervening spaces be filled with so many additional floor-beams, these would not only sustain themselves, but would contribute to the general strength of the floor; or, the floor not needing additional strength, the beams could all be reduced in depth to the required limit of strength. An arrangement of this kind produces what is termed a solid timber floor, upon which, there being no interstices for the passage of air, the fire, retarded, acts only in slowly charring the surface. Such a floor would resist the action of fire for many hours, and would be effectual in preventing the spread of it.

But wood is subject to decay; and for this reason is inferior to iron, which is deteriorated by rust generally in a very small degree. Where iron can be protected from injury by fire, it is far superior to wood. For general building purposes, however, wood, if protected from decay, is superior to iron. Our want now is some effectual ready method of preventing decay in wood. Until something better is offered, floor-beams and posts may be subjected to the Kyanizing or to the Burnetizing process, which are claimed to be effectual. It has been proposed, after wood is Kyanized, to coat it with silicate of soda as a protection from fire. Experiments on a large scale in this direction are desirable, and might well be undertaken by the General Government at Washington.

Investigations lately made show that the archives of the War Department are exposed to destruction by fire, being lodged in buildings of a frail nature. Self-protection may possibly inspire the authorities to make the indicated tests of wood, from which results may flow of great importance to the country at large.

In planning buildings to endure, it is required that the walls and partitions, of ample thickness, be made of well-burned brick put together with the best of mortar, and that the floors, as far as practicable, be also made of brick, vaulted. Where this is not practicable, owing to the lateral thrust of the vaulting, then the floors should be of prepared timber laid together solid, and coated beneath with an inch of plastering on wooden lath coated with the silicate of soda; the plastering largely composed of plaster or gypsum. The floor timbers should be attached to each other by spikes or dowels, and lodged at the ends on brick ledges, corbelled out from a good depth below, and secured to the walls with iron anchors. The ends of the beams should be cut inclining, so that while of full length at the lower edge they will be an inch distant from each wall at the top edge; and this space between the wall and the beams should be kept open for ventilation. The floors at or below the level of the street should always be vaulted with brick; for here it will not be difficult to secure sufficient buttressing to the arches, and here, where the furnaces for heating are located there is the more need of protection. All flues for heating should be of ample size and lined with earthenware pipe. Stairways usually of wood afford means for the rapid spread of fire from the lower to the upper stories. Where practicable these should be of brick and stone; and the stairway of each story should be provided with doors by which to isolate it from the other stairways. All partitions should be of brick, especially those about a stairway or an elevator. All shafts for elevators or for light or air should be provided with doors at each floor, in order to cut off when required all opportunity for a current of air. Wooden furring on walls is highly dangerous. Where used it should be provided with bars of filling at proper intervals to prevent draught and, incidentally, the circulation of vermin. Partition walls of brick should, when possible, take the place of lines of posts and girders, that the apartments may be reduced in size; and the openings in the walls should be provided with doors and shutters by which to isolate the apartments.

If buildings were constructed in this manner, a fire would seldom extend beyond the apartment in which it originated.

To protect the exterior, all wooden cornices, dormer windows, and the like should be avoided. Roofs should be of slate or metal laid upon a good bed of cement concrete. The walls should be extended well above the roof, and coped with stone or iron. The exterior walls should all be of good solid brickwork. If, however, there be iron posts as those of a store-front, they should be filled in solid with brickwork of ample size to carry alone the weight of the upper walls.

Buildings of the character here indicated could be erected at a cost not to exceed fifty per cent additional to that of the average city building, and in a city of such buildings damage by fire would be reduced to a minimum.

THE ILLUSTRATIONS.

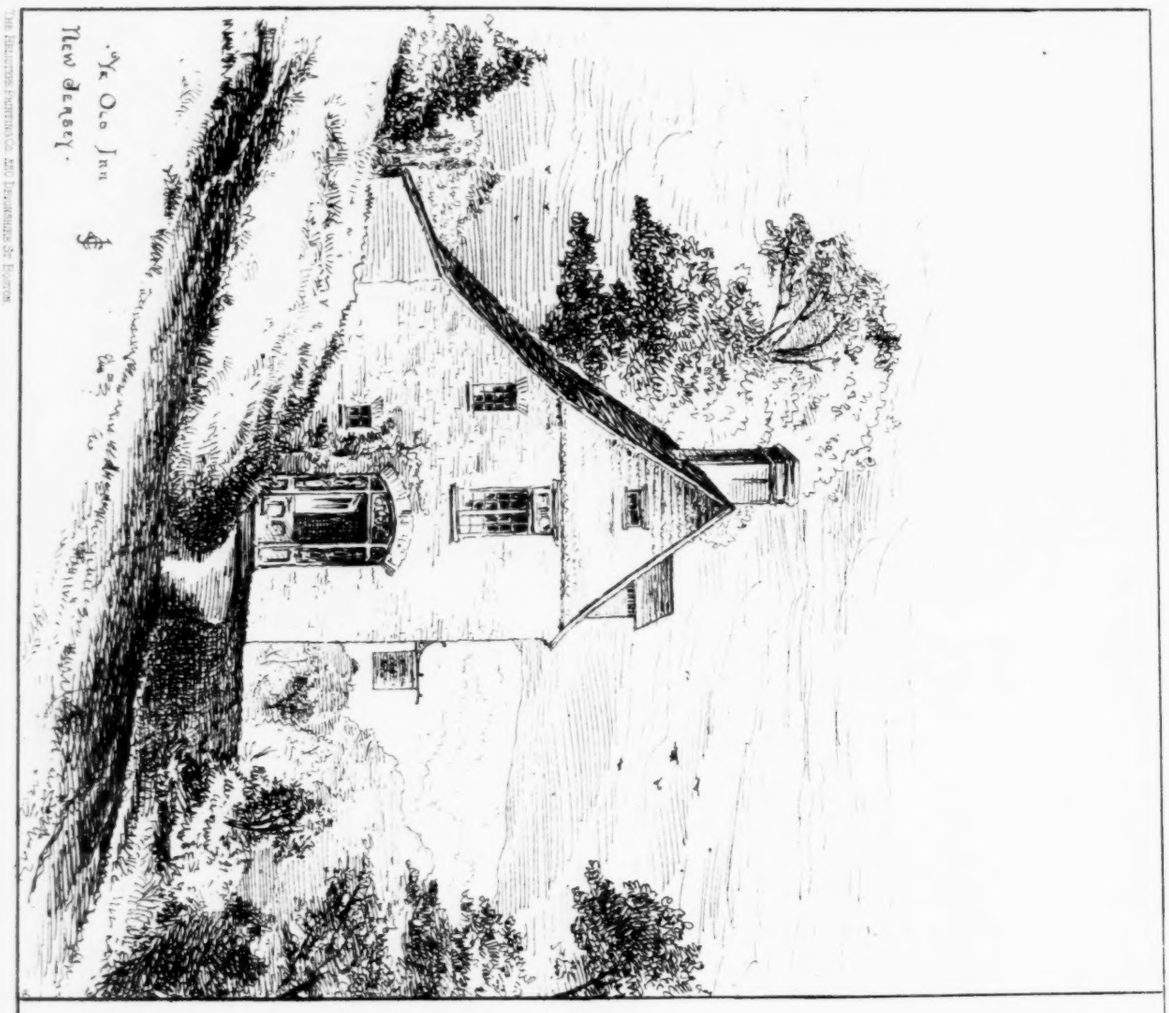
COLLEGE BUILDING, COLORADO SPRINGS, COL. MESSRS. PEABODY AND STEARNS, ARCHITECTS.

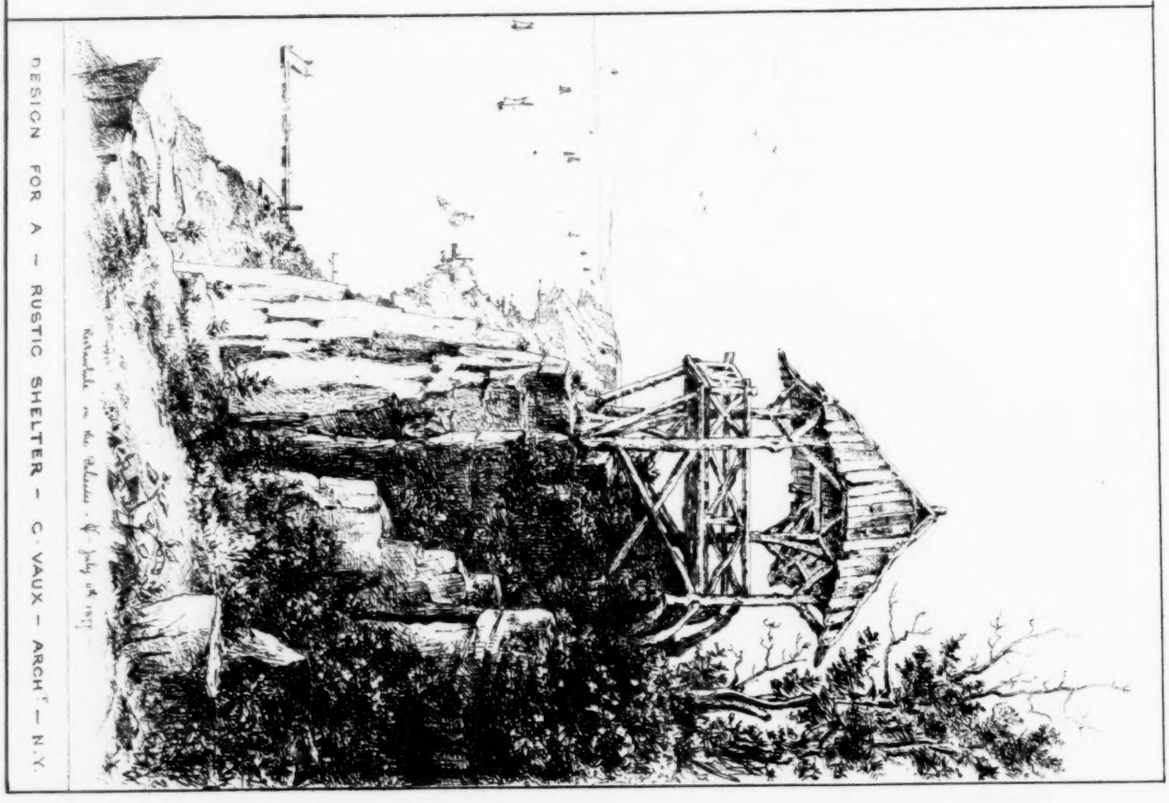
THE central portion of this building is now begun. The walls are to be of pink stone with light stone for the finish. The town of Colorado Springs is not far from Pike's Peak.

HOUSE FOR MR. G. C. WILKINS, BALTIMORE, MD. MR. J. APPLETON WILSON, ARCHITECT.

This house is 24′ wide and 66′ deep, built of Baltimore press brick laid in black mortar, with patterns of black brick, and a very few tiles. The stone caps, sills, etc., are of Indiana oölitic limestone of a light color, rubbed. The roofs of the dormers and oriel with main roof are covered with black slate with belts of red. The second story overhangs five inches in front and on the side; a wrought-iron balcony projects from the second story level in front. The house is plastered throughout with "sand" finish. The front and vestibule doors, stairway, and hall are finished in ash; the remainder of the house in pine, painted. Wood mantels, tile linings, and hearths are in all the principal rooms.

DESIGN FOR A RUSTIC SHELTER ON THE PALISADES. MR. CALVERT VAUX, ARCHITECT.

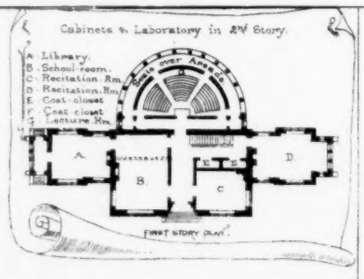




DESIGN FOR A - RUSTIC SHELTER - C. VAUX - ARCH.T - N.Y.

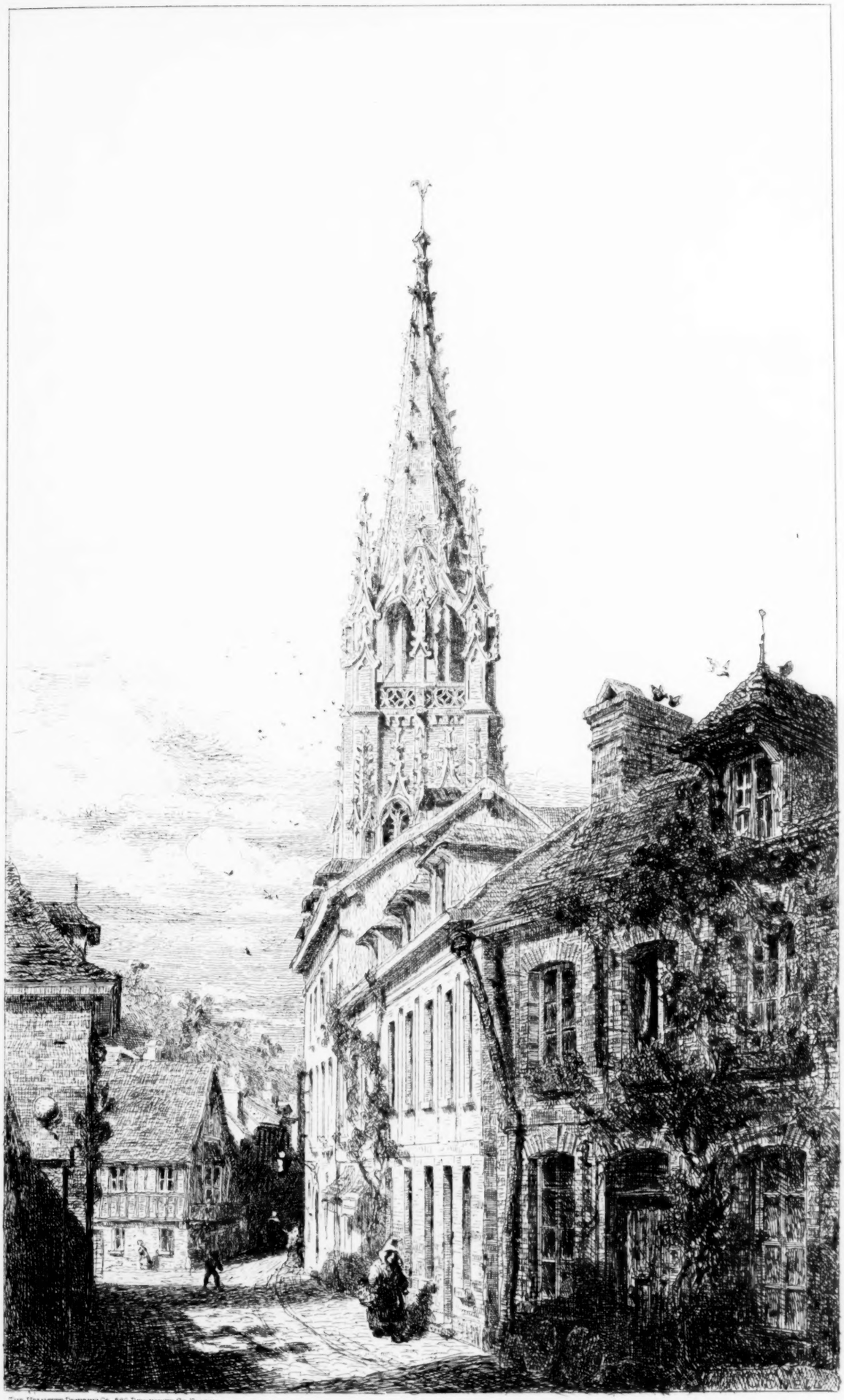
College Building Colorado Springs Peabody & Stearns Archts Boston Mass.

FRONT VIEW



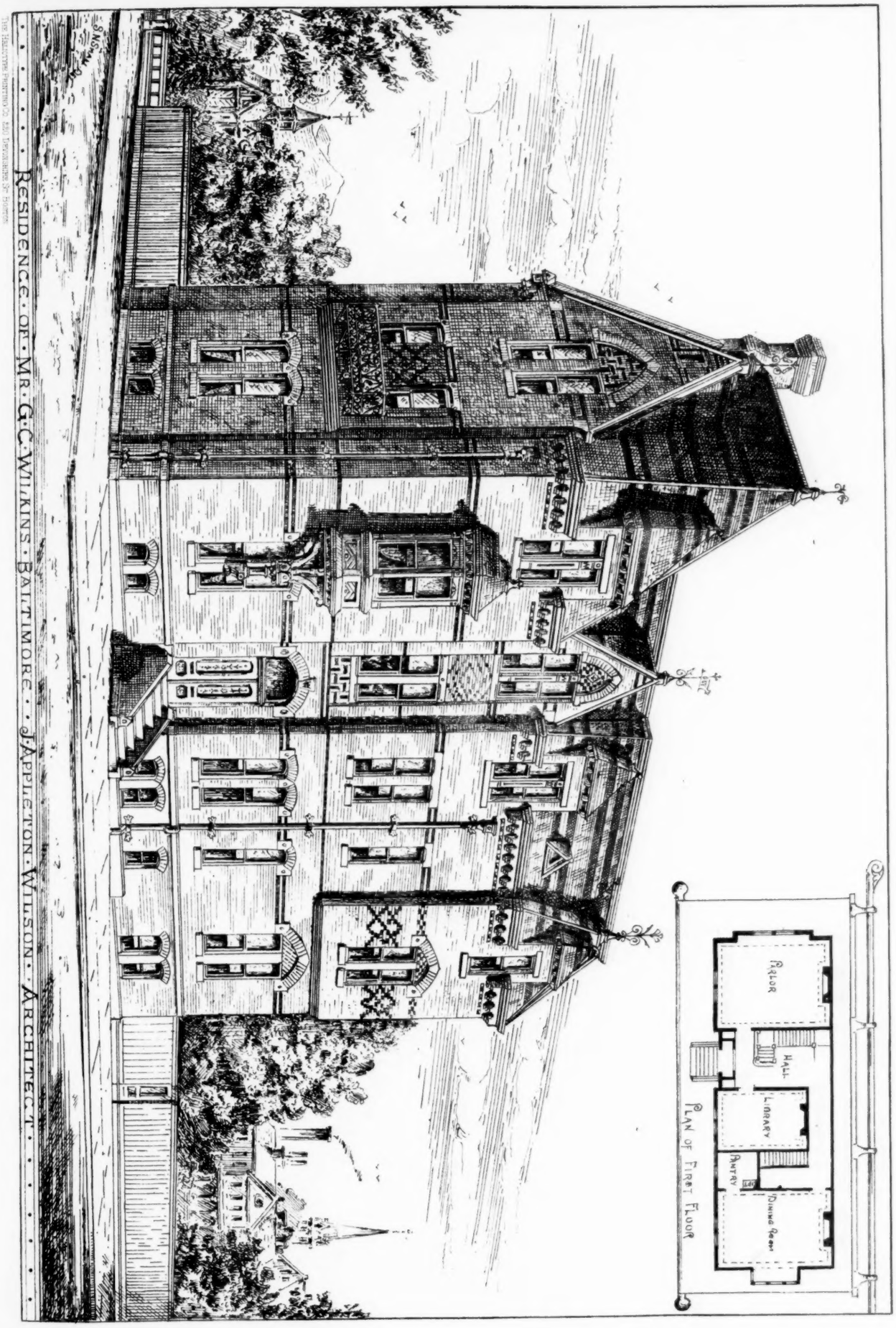
BACK VIEW

THE HELIOTYPE PRINTING CO. 220 DEVONSHIRE ST BOSTON



THE HELIOTYPE PRINTING CO. 330 DEVONSHIRE ST. BOSTON

— A STREET IN LILLEBONNE, NORMANDY. —



RESIDENCE OF MR. G.C. WILKINS · BALTIMORE · · J. APPLETON WILSON · ARCHITECT · · · · · ·

Y• OLD INN, NEW JERSEY. SKETCHED BY MR. J. CLEVELAND CADY, ARCHITECT.

See the following article on "Some Features of the Dutch Farm-Houses of New Jersey."

A STREET VIEW IN LILLEBONNE, NORMANDY. SKETCHED AND ETCHED BY MR. GEORGE SNELL, ARCHITECT.

SOME FEATURES OF THE DUTCH FARM-HOUSES OF NEW JERSEY.

[A paper read before the New York Chapter, A.I.A., on Dec. 4, by J. Cleveland Cady, F.A.I.A.]

OF late our attention has been frequently directed to that phase of domestic architecture styled Colonial, fine specimens of which are frequently seen in New England and in some other portions of our country. Those who have given most attention to it have been surprised and delighted with its refinement, air of elegance, its domestic character, and also in many cases its very choice carpentry. When, however, we consider those for whom these houses were built, and the people who built them, we are not surprised; since those for whom these fine homes were erected were often very wealthy, — many having amassed great fortunes in the India trade, others in successful whale-fisheries, and others still having inherited fortunes from English ancestors. These people lived luxuriously; their houses were places of great hospitality, abounding in merry-makings and family and social gatherings of the liveliest sort. In many cases they brought their plans for building from the mother country; in others they were devised by mechanics who vividly remembered the old country houses. Indeed, in the matter of mechanics they seem to have been peculiarly favored, there being in the country a large number of skilled workmen, both English and French, who had come over with the armies. I remember being very strongly impressed, when quite young, by a few houses in a Connecticut village that possessed unusual character and interest. Subsequent investigation revealed the fact that a portion of Lafayette's army was quartered near the town one winter, and some Frenchmen who had come over with him had been induced to settle there later, and resume their old trade of house-building for the benefit of some of the more aristocratic families of that day.

In the region of Northern New Jersey, however, we find a very interesting class of old houses that were built without such peculiar advantages as have been mentioned, their owners neither possessing wealth nor being able to secure very skilled mechanics; and yet for interest and comeliness they put to blush the average house of modern build.

Let us look for a moment at the contrast that is continually presented to one passing through this part of the country. The Dutch houses are broad (seldom lofty); horizontal lines predominate; their roof masses are simple, expressive, and often graceful. The houses never seem ambitious or pretentious; the big chimneys, broad, well-lighted doorways, and spreading roofs suggest hospitality and good cheer. Moreover, the buildings are often singularly well adapted to their sites. The modern houses which one sees in contrast (and they are not sinners above others) are usually tall and gaunt, as if in their ambitious haste they had, like many precocious children, grown too fast for their strength; their lines often suggest "Excelsior" as their key-note, but rarely the spreading shelter of the home-like roof. The roofs are as broken as possible, bristling with dormers, iron crestings, turrets, and, if means will possibly permit, a tower. The chimney is generally a slender, unimportant feature, suggesting air-tight stoves (which are usually accompanied by a poor state of health that precludes hospitality), and the matter of site seems less regarded than the desire to be a little smarter than their neighbors. No wonder that people of taste moving from town to this part of the country eagerly seek for an old Dutch house; it is only to be regretted that they so often spoil them in the additions they make.

The builders of the old Dutch houses were not people of any special taste or refinement. They were of the class Washington Irving has so comically described in his account of the settling of Communipaw. I have seen a collection of veritable descendants of these early settlers at work preparing the foundations of a house, and felt that Irving's description was not a whit exaggerated, — such funny, droll Dutchmen, so oddly attired, and so ungainly in their appearance and action. Yet their very lack of resources seems to have saved them from many of the abominations which people of a later date have fallen into. It was difficult for the Dutch settlers in those days to obtain good mortar, and so the masonry of the first story, which was usually built of stone, was laid in Jersey mud or clay. This involved the necessity of giving the walls careful protection from storms: so where the roof came over the wall it was often made to project several feet beyond with a graceful curve, forming in some cases the roof to a piazza; and where at the gable-ends a perpendicular wall of wood-work surmounted the stone, it overhung considerably. Very likely they did not think when exercising these wise precautions that they were adding grace and beauty to their roofs as well as picturesqueness to the walls. The gambrel or curbed roof prevailed; quaint in its lines, which consisted of a double slope on each side, the ends being carried up as gables. It was often of very pleasing proportions, and varied according to circumstances. The chimneys were of great size, as was necessary for the huge fireplaces that were filled with the cheerful blaze of the burning logs. The front door was broad, and usually divided horizontally in the centre. The origin of this division I have never ascertained. Its value nowadays seems to be in preventing the too free entrance of tramps to country houses, while allowing a full play of light and air. The door had heavy fastenings and hinges of wrought iron, often interesting in design; the side lights and head lights were framed in a sort of traceried sash of light flowing pattern that contrasted agreeably with the massive solidity of the door. The glass itself was interesting though rough; the sash-work sometimes contained bull's-eyes of oval or egg shapes, that were much more effective than those that are now in such vogue among our stained-glass workers. The piazza work was lighter than that of the present time, and less clumsy, and yet abundantly strong; it often embraced seats that seemed inviting. The color of these houses was usually quiet; the first story being of brown stone, the gable-ends and carpentry painted an olive or drab. Very often, however, this wood-work was in white, but there was so little of it that it was not glaring. The all-spreading roofs took on the gray that time with its toning hand, its lichens and mosses, adds to unpainted shingles.

It has been said that these houses were often well adapted to the site. In Bergen County as you journey north, you suddenly come to a little but steep hill: at your right is an old house evidently built for a tavern; its southern front is at the base of the hill, and is some three stories high; its northern end is on the summit of the hill and is about four feet in height, the shape of the house being something like a V somewhat opened, the short point resting on the hill. The practical advantages were, that as the portion to the south contained the most of the windows, all the stories shared this advantage; but on the north the down-sloping roof and uprising ground gave complete protection from the storms of winter. The artistic interest is in the spirit and picturesqueness of the lines, broken slightly as they are in their downward or upward course, the lines of the hill being one factor of the combination. The building is one to excite the admiration of any one fond of the picturesque. It is a picturesqueness gained not by "making it up," or working hard for it, but by using common sense and good judgment in studying the site and adapting the house to it. Were the old house to be pulled down and some one to build again, very likely they would build upon the hill, or pull the hill down to a dead level or "nice grade," and then build a senseless and commonplace dwelling that would have no particular connection with the landscape; instead of the cosey dwelling with its front extended and open to the sun, its back bent to receive the north and wintry storm, and the whole seeming to have grown out of the hillside, and to be a part of it.

For a glimpse at the interior of one of these houses, come with me in imagination to a friend who has a possession of this kind that he values greatly. We enter a good-sized hall, furnished very much like the rest of the first floor, and connecting with the drawing-room by a large opening which is partially draped. This hall which is free from staircases forms practically an extension to the drawing-room in summer, but in winter becomes merely a vestibule. The ceilings of the first story are supported by massive timbers which have never been painted; and they and the wood-work they carry possess a beautifully soft fawn-color, the result of age, and probably also of very many scrubbings. In the centre of one side of the drawing-room is an immense fireplace and chimney, whose form rises to the ceiling, and whose brass dogs bear heavy logs. The fireplace has its jambs, and, indeed the whole breast up to the ceiling, covered with old Dutch tiles of a purplish hue, a great number of them in all, and far more droll in design than the modern imitations. On either side of this fireplace is a cupboard for choice glass, crockery, or books, the closets being glazed and having quaint tracery to hold the glass as in the case of the front door. The shelves are prettily curved in plan, and interspersed among them are convenient lockers, drawers, and secret hiding-places for valuables; a most entertaining piece of ingenuity and nice carpentry. The windows are deeply set in thick stone walls, the sash being rather heavy and holding small lights.

As we sit in these rooms, and reflection and curiosity are stimulated, we realize that they are not large, yet they seem extremely spacious; and we are led at once to investigate from whence this effect arises. The first assignable cause seems to be the low ceilings (about eight feet), which not only give an air of cosiness, but increase the breadth of the rooms; next we cannot but conclude that the very small trim architraves, etc., must greatly increase this effect; then the small sash-lights, and lastly, perhaps, the general good sense in furnishing.

As has been mentioned, the finish is very small, and the mouldings everywhere simple and delicate. Machine-mouldings were happily unknown in those days; and the mouldings, being worked by hand, were simpler, smaller, and vastly better than the elaborate and untamed members that machinery now turns out so

plentifully that apparently no family feels that they need be without them.

As we take a final survey of this homelike cosey interior, we see that the timbered and ceiled ceiling is far prettier in color and light and shade, than any expanse of plaster could be; that the large fireplace suggests an ample allowance of the greatest of all creature-comforts; that the low ceilings give a feeling of cosiness, and seem to frame in the pretty objects of the room as high ceilings could not; and that the simplicity and smallness of such details as mouldings, etc., have increased the apparent size of the place very greatly.

For one, I feel that both outside and inside of their dwellings, the old Dutchmen can teach us much that is sensible and interesting.

CORRESPONDENCE.

THE LONG ISLAND HISTORICAL SOCIETY'S BUILDING. — ASYLUMS FOR THE PAUPER INSANE. — MEETING OF THE NEW YORK CHAPTER, A. I. A.

NEW YORK.

THE uncertainty about the Long Island Historical Building is nearing a solution, the Building Committee having resolved to have all plans sent in on or before Jan. 1. As a matter of fact the majority of the designs are either delivered or ready for delivery by the architects. It will be an irregular close competition: seven or eight architects, who had either sent in drawings or had notified the society officers of their intention to do so, have been placed on the list, and the name of Mr. Eidlitz has been added by a special vote of the committee. As there is no official guaranty that the best or any design out of those sent in will be carried out, Mr. Eidlitz will not break his rule of refusing to participate in competitions of this class. A competition in such a case as this is manifestly absurd. There is nothing novel in the requirements; a small meeting hall, a library, and a museum, with the necessary ante-rooms, are to be provided on a 70 x 90 feet plat of ground. Cheapness is essential, as the society managers expect to get the building for about $75,000. A dozen architects could be selected here, any one of whom could thoroughly and satisfactorily meet the demands of the committee and the society. Instead of following this course, the yet unchosen committee-men are clamorously besieged by a dozen or more aspirants, each anxious to submit his design on speculation. The committee have consented to look at the works, and thus a competition is instituted. Had the problem been a difficult or novel one, such for instance as a Stewart Memorial Church or a Saratoga Monument, where the expenditure of large sums was at stake, a competition properly conducted would have been justifiable. But the Historical Society competition becomes important simply by the efforts of the architects to make it so, and its conspicuousness will be in failure rather than in success. One step further, and competitions for a row of brown-stone fronts or possibly a tenement-house may be met; but when as at present, plans may be secured gratis, provided the duty of superintendence is given, there would hardly seem to be room for under-cutting competition.

The architect of the Department of Charities and Correction, Mr. Joseph M. Dunn, is busy upon a series of plans looking to the better accommodation of the insane among the city paupers. The asylum on Blackwell's Island is to have a new story added; the asylum on Ward's Island will have a new wing, 65 x 180 feet, and four stories high; while on Hart's Island, farther up the river, an entirely new asylum is building. The buildings are to be built of the trap and granitic rock quarried upon the islands by the prisoners, by whom also the bulk of the work will be done.

A Chapter meeting was held Dec. 4, at the Institute rooms, R. G. Hatfield in the chair. The feature of the gathering was the reading of a brief paper by J. Cleveland Cady, founded on notes and observations among the old Dutch farm-houses in New Jersey and elsewhere. In the discussion which followed, Mr. Haight, Mr. McKim, and other members recalled observations which they had made, and measurements taken of similar old buildings; and with sketches upon the black-board the afternoon session was very agreeably filled. W.

THE PALESTINE EXPLORATIONS.

[From the Opening Address of Mr. Barry read before the Royal Institute of British Architects.]

I MAY not pass on without allusion to another work of exploration of the greatest interest, and which has been pursued and persevered with under much difficulty and disappointment. I allude to the "Palestine Explorations." It was early felt, that before exploring particular spots in detail, it was almost essential to have a far more correct map than existed of the whole of the country both east and west of the river Jordan. The east side was undertaken by an American committee, who have not, however, made much progress. The west side was undertaken by our own countrymen, and an excellent map has now been nearly completed, after a persistent labor of some years. A tract of country of 7,340 square miles has been accurately surveyed, — the hills shaded on the spot, — on a scale of one inch to the mile; and the map, as accurate as ordnance maps are, is the gratifying result. The sites of about eight times as many places have been identified and marked on it as are shown on the most correct maps previously existing; while, in addition to the land survey thus made, careful measurements have been taken, and drawings made, of a large number of architectural ruins of all ages, the greater part of which have now been seen and measured for the first time.

As the American society has made little or no progress, I am informed that, should their funds enable them, our own "Palestine Exploration Committee" will now commence a similar map and record of the country on the east side of Jordan. The extremely interesting excavations by Lieut. Warren, undertaken also at the instance of the Palestine Committee, have been obliged to be suspended for the present. They were, however, so very promising, and they had already afforded so much curious information, that it is to be hoped they may be resumed. With regard, therefore, to all those laboring in distant lands in matters of such great interest to us here as architects or archæologists, and remembering how earnestly Dr. Schliemann assured us that one of the greatest incentives an explorer can have is to feel that he is not alone, but has the interest, regard, and good wishes of sympathizers all over the world, I may, I am sure, as last year, on behalf of this Institute, wish "God speed" to all who thus are laboring abroad.

TESTING COVERINGS FOR STEAM-PIPES.

THE Trinity College Building Committee have lately investigated the properties of several of the many kinds of coverings for steam-pipes, a matter which is of such interest to the profession that we reprint from the Hartford *Courant* the account of the test.

"After the reception of tenders by various competing firms for the covering of the pipes, which embrace some eight thousand lineal feet, and include pipe varying in size from two to six inches, the superintending architect, Mr. F. H. Kimball, visited New York for the purpose of a personal examination of work which had been done by different parties; but opinions conflicting greatly as to the merits of material used, it was deemed best to make an exhaustive test upon a portion of the pipes in one of the college blocks. The work of testing the pipes to discover leakages having been completed a week or ten days ago, samples of pipe-covering were put on by the following companies: the H. W. Johns Manufacturing Company, the Asbestos Felting Company, the United States and Foreign Salamander Felting Company, and the Chalmers-Spence Company, all of New York. The samples having been placed around a six-inch pipe to the satisfaction of the respective competitors, a wooden box was constructed with an open bottom, and two of the sides cut in a semicircle to fit closely to the covering. A light of glass was fitted in one side of the box, through which a thermometer could be seen suspended from the top until it hung within an inch of the pipe-covering. The box having been placed on the sample, all cracks were securely plastered up so that it was perfectly air-tight. It was first put over the covering made by the H. W. Johns Company. This consisted of one and one-half inches of asbestos mixed with other ingredients upon a lining of heavy felt paper laid next the pipe. During thirty minutes in which this test was made, the thermometer rose from 97° to 103°. The covering of the Asbestos Felting Company was next tried. It was two inches in thickness, and in ten minutes the thermometer rose from 97° to 102°, and in half an hour from 97° to 105°. The air space covering of the Chalmers-Spence Company was then tested. Over a one-inch air space a one-inch plastic covering composed of various non-combustible and non-conducting materials was placed. At this test, the thermometer which marked 90° when the box was put on would not rise above 94°, the time allowed being thirty minutes. A test was also made of the 'plain' covering manufactured by this firm. It consists of one and one-half inches of the composition used in the first method, without the air space. During thirty minutes when it was tested the thermometer rose from 97° to 102°. The Salamander Company's covering was then tried. It is made by a coating of one and one-half inches of cement. In this test for which the same time, thirty minutes, was allowed, the thermometer rose from 97° to 102°. All the above tests were made under a pressure of ten pounds of steam. To condense the results of the various trials, the following table is given: —

Covering.	Thermometer when put in.	Rise in 30 min.
H. W. Johns Manufacturing Co.	97°	103°
The Asbestos Felting Co.	97°	105°
The United States and Foreign Salamander Felting Co.	97°	102°
The Chalmers-Spence Co. 'plain'	97°	102°
The Chalmers-Spence Co. 'air space'	90°	94°

"It was demonstrated that the 'air space' covering was superior to the other methods tried; and after consultation and a consideration of the merits of the work shown in sample by each of the competing firms, the contract was awarded by the committee to the Chalmers-Spence Company of New York."

FIRES IN 1877. — It is said that in spite of there having been no great conflagrations, the losses this year will be ten per cent larger than the losses last year.

MAHAN'S INDUSTRIAL DRAWING.

TROY, N.Y.

TO THE EDITOR OF THE AMERICAN ARCHITECT AND BUILDING NEWS.

Dear Sir, — Having had my attention recently called to an article in your magazine criticising the revision of "Mahan's Industrial Drawing," I am unwilling to let it pass unnoticed. Will you be kind enough to publish this reply, on the principle of fair play?

The writer says, "The change of notation is a change for the worse, so that small Italic letters in the plates refer in the text sometimes to capitals and sometimes to small letters." The only change made in the notation was to substitute small letters in place of the capitals used to mark the horizontal projections of points, so that a point would be lettered a a', instead of A a'. I have simply changed the notation so as to conform to that in common use.

In the new chapter on Shadows, capitals are used in the text to refer to small letters on the plates, in this way: the point *a a'* is spoken of as the point *A*; or the line *a b — a 'b'* as the line *AB*. Now, this method of notation is sanctioned by authors of standing.

In Isometrical Drawing, *if* I have failed to present the subject clearly, there is certainly nothing in the text to warrant the construction which he gives.

It .. true that the chapter commences with a short explanation of Isometrical Projection, but simply for the sake of obtaining the principles of Isometrical Drawing, the relation between the two being shown. The text does not state that the two are "quite different." Neither does the use of the word "true" warrant the conclusion that a third kind of projection, different from either of these, was intended.

Since the critic has thought the errors in the plates of sufficient importance to notice, I will explain that the error in the perspective of the hexagon was made by the engraver, and overlooked in correcting the proof, but it is a thing that cannot mislead the student who follows the text.

In regard to the models which he calls poor and not well drawn, they were given as examples requiring great care in construction, and answer that purpose, though the execution of the intersections and tangencies is not the best. He says further in regard to these that only ordinary methods should be used in their construction; to which I reply that only ordinary methods are given in the chapter on regular figures, which these illustrate.

D. F. THOMPSON.

AMERICAN INSTITUTE OF ARCHITECTS.

BOSTON CHAPTER.

THE regular monthly meeting of the Boston Society of Architects took place at the Institute of Technology on Friday evening, Dec. 7. There was an unusually full attendance. The old committee on business for the meetings was re-elected.

Mr. E. R. Andrews then gave to the Society an interesting description of the process of preserving timber from dry or wet rot, by the Hayford method. This process consists in thoroughly steaming the green timber in an iron cylinder, and then establishing a vacuum in which all the natural sap is evaporated from the wood. After the wood is thus thoroughly dried, the emptied pores of the wood are filled with the hot oil of creosote by an injecting shower under a pressure of fifty or sixty pounds. All these processes take place in the same cylinder by the use of the same pump, and seem to be thoroughly efficacious. Specimens of various kinds of wood were exhibited, showing the degree of impregnation, and their soundness after exposure to unfavorable conditions for many years. Mr. Andrews also recited to the meeting the results of certain experiments to test the effect of this process upon the strength of the woods. These experiments, although acknowledged to be incomplete, seemed to leave no question that the strength of the material was notably increased.

Mr. Andrews invited the members to inspect his works and processes at South Boston.

After a prolonged discussion on this subject, a vote of thanks to Mr. Andrews was moved and passed.

The Society then heard a report from the Executive Committee, referring to various passages in the report of the Commission of the Sewage of Boston, from which it appears that in the opinion of this Commission the system which they propose will have the effect of lowering the level of the ground-water several feet. In view of the obvious danger to the piling on the Back Bay territory (much of which is cut off above grade 5, and some as high as grade 7½ or even 8) to be occasioned by this subsidence of the ground-water, the Executive Committee instructed the Secretary to communicate with Mr. Chesbrough, C.E., the chairman of the Commission, for a further expression of his views on this subject.

In reply to the communication, the following letter was received: —

CHICAGO, Dec. 4, 1877.

HENRY VAN BRUNT, ESQ., SECRETARY BOSTON SOCIETY OF ARCHITECTS.

Dear Sir, — Your letter of Nov. 22 has been received. With regard to the basis for the opinion expressed on pp. 25 and 40 of the Report of the Commission on the Sewerage of Boston (City Doc. 3, 1876), it is founded upon the belief that the system proposed would ordinarily keep the sewage constantly flowing towards the main outlet, and consequently the sewers would be free from back water at flood tides. As ordinary brick sewers, even when laid in cement throughout, do drain the soil through which they pass down to near the average level of the water in them, such a result must be expected in this case, if nothing is done to prevent it. The surface of the ground-water each way from a sewer is usually an inclined plane, more or less steep according to the character of the soil. How much the ground-water would be lowered at any point, or how much, on an average, throughout the district to be drained, it is impossible to tell: and of course equally so to say what would be the effect upon foundation piles.

On page 22 of the report of the Commission it is said, "We propose that the main and branch intercepting sewers shall be so constructed that no water will leak into them through their bottoms or side walls; for by just the quantity that may be thus allowed to leak into them, will their efficiency be diminished." Now, if this is done, dangerous lowering of the ground-water near the main and branch intercepting sewers will be prevented. The interior of existing sewers, whenever desirable, could, I am satisfied, be effectually coated with cement so as to prevent leakage through them in most cases. Our experience here with catch-basins justifies this opinion.

These and other precautions could be taken; but no doubt the City Engineer will have careful examinations made before and after the construction of the sewers, and will suggest such measures as will prevent serious damage, should any be necessary.

Very respectfully,

E. S. CHESBROUGH.

A communication from Professor Agassiz was also read, enumerating in detail the various points of danger, and advising in certain contingencies the placing an injunction on the execution of the present plan, so that these points may be considered in a scientific and exhaustive manner, and such modifications may be made in the scheme as may be found to be necessary.

The Society, after a careful consideration of this subject, voted to instruct the Executive Committee to address a letter to the mayor and aldermen, calling their attention to the grave danger to be incurred by the establishment of a system of intercepting sewers as proposed by the Commission; this system, according to their report, involving such a lowering of the ground-water as would lay bare the upper part of much of the foundation-piling on the Back Bay territory, thereby in the course of a few years causing serious dilapidations, and if so, possibly heavy suits for damages against the city.

The meeting then adjourned.

BOOKS RECEIVED.

EARLY NEW ENGLAND INTERIORS. — Sketched by Arthur Little. Illustrated by 36 quarto lithographic plates. Boston: A. Williams & Co. 1878. Price, $6.00.

QUANTITIES. — A text-book for surveyors, illustrated. By Banister Fletcher, F. R. I. B. A. London: B. T. Batsford. Price, 6*s*.

THE PLUMBER, AND SANITARY HOUSES. — A practical treatise on the principles of internal plumbing work, or the best means of effectually excluding noxious gases from our houses. Illustrated. By S. Stephens Hellyer. London: B. T. Batsford. Price, 7*s*. 6*d*.

NOTES AND CLIPPINGS.

FATAL FALL OF A BUILDING. — A building in course of erection on Prince William Street, St. John, N.B., fell Dec. 6, and eight men are supposed to have been buried in the ruins.

PANIC. — It is a long time since we have had to chronicle one of the panics which the memory of the disaster at Brooklyn at one time made unpleasantly frequent. During a funeral service at Norfolk, Va., on Dec. 4, an alarm of fire was given, caused by smoke from a stove in the basement. A sudden panic and stampede followed, in which ladies and children were trampled upon. Many ladies jumped from the church windows and galleries, one breaking her back, another her leg, another three ribs, while numbers were severely bruised and otherwise injured. The church was densely filled at the time.

FIRES IN CHICAGO. — The following is the summary of incidents attending fires in Chicago during the month of November: Alarms, 30; stills, 8; total, 38. Classification of buildings: Frame, 16; brick, 9; total, 26. Occupation: Dwellings, 9; dry goods, 2; barns, 2; and one each planing-mill, shavings-shed, furniture-factory, machine-shop, paint-factory, tailor-shop, oil-works, house of ill-fame, carpenter-shop, grocery, plaster-factory. Origin traceable to procurement, 3; foul chimneys, 7; ignition of wood-work around and joists penetrating insufficient chimneys and flues, 5; rekindling, 4; maliciousness, 2; and one each wood-work embedded in furnace walls, spontaneous combustion, barrel of shavings too near fire in a stove, wood-work ignited from a stove, ignition of clothing around a stove, domestic troubles, tipping over of a lamp in a bagnio row, bonfire, insecure stove, explosion of lamp, ignition of clothing around a laundry stove; false alarms, 5: total, 38. The entire loss for the month, not including the Singer Building and contents, will not exceed $7,000; to insurance, $6,900. Insurance involved, 41,000.

STREET-CARS. — The first street railways employing endless wire rope for the propulsion of their cars are in operation in San Francisco. The cars stop and start easily, and run more rapidly than horse-cars.

SAND FOUNDATIONS. — A block of stores is now building in Hartford, Conn., for which the foundations are laid in this way: Trenches are dug down to the hard-pan, and are then filled with water. Beach sand is then sifted in until the trenches are filled with the soaked and compacted sand, which is covered by a thick layer of concrete, which in turn is to receive the stone-work of the foundation walls.

IRRIGATION SCHEME FOR KANSAS. — It is proposed to redeem from sterility the great desert in the western part of Kansas and Nebraska, by damming the Arkansas and Platte rivers, and turning the waters into the desert, this forming a lake, from which water could be drawn for irrigating purposes.

THE PICTURE OF CATHERINE CORNARO. — The great picture of Venice doing homage to Catherine Cornaro, by Makart, which formed the most striking feature of the Austrian section in Memorial Hall a year ago, has been bought by the German Government, and will be placed over the grand staircase of the new National Gallery at Berlin. The price was 50,000 marks ($9,650).

COLUMBIA WATER-WORKS. — The *Scientific American* says that the Columbia, O., water-works, which are upon the Holly system, have now been in operation about seven years. Since they were built, the city has abandoned the use of the entire force of steam-engines, and the losses by fire have been decreased from an average, previous to the introduction of the water supply, of .65 of one per cent to .09 of one per cent upon the total tax valuation, while since 1870 the valuation of taxable property has increased, in round numbers, from $16,000,000 to $27,000,000 in 1876. The average daily amount of water now being pumped is about 1,600,000 gallons, the machinery with which the works are supplied being capable of furnishing 10,000,000 gallons daily for domestic use, or 7,000,000 gallons under fire pressure. There are now in use in the city upwards of 600 improved water-meters, from the Eagle Meter Co., of Brooklyn, L.I., which are recommended by the engineer in his report as giving better satisfaction than any meter yet tested. Since their introduction three years ago, the consumption has but slightly increased, notwithstanding the growth of the city.

BY-GONE NEW MEXICAN HOUSES. — The New York *Tribune* says: "Several models of the houses built by an extinct race in New Mexico and Arizona have been constructed under the auspices of the Hayden Survey. Some of these models were shown at Philadelphia. Mr. Jackson, the photographer of the survey, has made most of the models. The finer ones are described in detail in a recent number of *Forest and Stream*. Of the models lately made, that of the town of Taos is perhaps the most remarkable; its size is 42 by 39 inches; its scale, one inch to 20 feet. The work is first done in clay, and then is duplicated in plaster and carefully colored. The town is described as having two large houses on opposite sides of a creek that was once spanned by a bridge. The houses are 300–400 feet long and 150 wide at the base, five or six stories high, each story receding from the one below it, thus forming a terraced structure. Each story has numerous little compartments, with small windows in the outer tiers of rooms, the interior ones being dark. The only entrance is by a trap-door in the roof. Ascent was effected from story to story by ladders on the outside, which were drawn up at night. The village was surrounded by an adobe wall, enclosing ten or twelve acres, and contained four *estufas* or secret council-houses, which were circular underground apartments, accessible by means of ladders through a hole in the roof, which was fortified by a palisade. Most of these villages were perched on cliffs of great height and almost perpendicular steepness, and could be reached only by narrow roadways or staircases cut in the rock: perhaps the ascent was in part facilitated by ladders."

DEATH OF MR. SMIRKE. — Mr. Sydney Smirke, the English architect, has just died. He designed many important public buildings, was elected Associate of the Royal Academy in 1848, and had received the Gold Medal of the Royal Institute of British Architects.

A COLOSSAL STATUE OF CAPT. COOK. — The statue of Capt. Cook, which Mr. Woolner has so long been engaged upon for the government of New South Wales, will be sent to the founders in a few days; and we hear that it is not to be shown to the public in this country. The size of this statue is remarkable: it measures 13 feet 6 inches from the feet to the crown of the head, and nearly 2 feet more to the end of the uplifted arm. Thus, when placed on the pedestal already provided for its reception in Hyde Park, Sydney, the total height above the ground will be not less than 37 feet. The attitude is easy yet imposing. The great navigator has come on deck bareheaded, and has just made out the new continent showing dimly in the early morning sun. He is thus represented in the moment of a discovery which entitles Cook to rank immediately below Columbus in the list of discoverers. The drapery is most carefully worked; and the old-fashioned garb, with its laced coat, large pocketed waistcoat, tight knee-breeches, and large buckled shoes, seems to have lost its grotesqueness in the way it is here managed, and to be better suited than any other to the occasion, though the inevitable queue scarcely suits one's idea of a becoming finish to the neck. — *Pall Mall Gazette.*

STATUE OF JOHN STUART MILL. — The statue of John Stuart Mill, begun by Foley, and finished after his death by Woolner, is about to be placed on the Thames Embankment in London.

THE HÔTEL DE VILLE, PARIS. — The new Hôtel de Ville at Paris will cost, exclusive of all furnishing and decoration, 21,500,000 francs ($4,300,000).

GERMAN SUBTERRANEAN TELEGRAPH CABLES. — The total length of the German subterranean cables is now 1,477 kilometres (917¼ miles). Each cable contains seven wires.

THE COST OF ELECTRIC LIGHTING. — It appears to be difficult to arrive at the cost of using the electric light; figures of estimate in different experiments varying considerably. In many manufacturing establishments, the cost of the power to drive a magneto-electric machine would scarcely be felt, as only two or three horse-power at the most would be required. The cost of the carbons is said to be less than five cents per hour, per lamp, on the Jablochkoff plan; another estimate is about twice as much, but perhaps refers to two lamps instead of one. An electric light which does not, according to the accounts, appear to be constructed on the Jablochkoff plan, tested in practical service at La Chapelle, France, costs, including motive-power for the machine, about twelve cents per lamp, per hour. Machines capable of running three lamps cost less than $500; and perhaps that sum could be made to cover all the first outlay. The wear and tear of the machine is not estimated. A careful study of the figures thus far furnished leads to the belief that light can be furnished by electricity in France, at about two-fifths the cost of gas; and, as the price of gas in most American cities exceeds the price in Europe, it seems probable that a similar estimate of the comparative cost of electric illumination for this country would fairly apply. — *N. Y. Tribune.*

WHAT IS A VERANDA? — In Hamburg, at a recent meeting of the Society of Architects and Engineers, a committee was appointed to consider the question: "What is a veranda?"

The chairman returned answer, that after much consultation the members could come to no definite conclusion, but would beg to recommend the appointment of a second and larger committee, that after a positive decision there might be no collision with the inspector of buildings from a possible misunderstanding of the statutes! It seems that the word *veranda* (*Anglicé* verandah) is Italian, from the Latin *virens* (to be verdant), and signifies a leafy passage, — that is to say a corridor-like bower built of slats resting originally on posts; if on stone columns, the word *pergola* is perhaps more applicable.

The appointment of two committees to decide so simple a question is characteristic.

OLYMPIA. — The German expedition to Olympia sends from time to time reports of its discovery of fragments of sculpture and architectural details; but no account has yet been received which can enable us to understand the general arrangement of the group of buildings; and absolutely nothing to enlarge and correct our present imperfect knowledge of the great hexastyle temple, its proportions and exact dimensions.

The remains of a Christian church have lately been unearthed, — a basilica built on an ancient substructure during the rule of the Byzantines. It is supposed that its foundation walls were part of the Hyppodameion, the temple erected to Hippodamia, King Pelops' queen, which stood near the principal portal through which the processions passed into the Altis. Between the arcades of the small portico which is on the southern side of the basilican atrium, were discovered blocks of marble, stepped, and forming a circular stylobate, evidently the base of a group of statuary. The basilica itself, the existence of which was indeed already known to the French expedition to Morea, is built of brick and has three aisles. To the east was an apse lighted by four (!) windows, to the west a narthex of five arcades. On the western side of the atrium, before mentioned, are two chambers of uncertain use. The details of the interior lead to the supposition that the basilica was built at a very early period, an opinion that has gained strength by the discovery of two tombstones in the central aisle, which record in Byzantine inscriptions the virtues of two anagnosts (lectors) who were employed in the construction of the church. The circumstance that the apse is towards the east seems however to indicate that it was not built before the year 420, as all Christian basilicas known to have been erected previous to that date had their altar-niches to the west.

UTILIZING SUBTERRANEAN HEAT. — The Virginia City (Nev.) *Enterprise* says, "An enterprising engineer of this city is engaged in working out a plan for heating the whole town by means of the heat generated in the subterranean regions of the mines. He says there is sufficient heat in the lower levels of the mines, underneath our feet, to comfortably warm every house and every room in the city, provided it can be utilized. His plan contemplates a system of pipes, through which the heat will be distributed, while at the same time it will be drawn out of the mines as it arises. Thus he will at the same time heat the town and ventilate the mines."

AN ANECDOTE OF M. DAVIOUD. — *L'Architecte* tells this amusing piece of gossip of M. Davioud, the architect of the palace of the Trocadéro. When in 1872 M. Davioud was created a knight of the Legion of Honor, there was in his employ an excellent draughtsman, a younger man than he, who had been decorated in 1848–9, but who like a modest man never wore his decoration. On the day when M. Davioud received the ribbon the office was filled with his boisterous exultation. Imagine his surprise the next day at seeing his assistant enter the office with the coveted scrap of red ribbon peeping from his button-hole. To-day the assistant is an officer of the Legion of Honor of five or six years standing, and M. Davioud bears his chagrin as best he may.

IRIDESCENT GLASS. — A process for making glass iridescent has been patented by M. Clémandot. Beautiful effects are produced. The main feature of the process is the application of acids to the glass, under a pressure of from two to five or more atmospheres. Water containing fifteen per cent of hydrochloric acid is used to bring out rainbow tints like mother-of-pearl; and artificial gems of various sorts have thus been manufactured. The glass prepared by these processes is quite as iridescent as is that which antiquaries so much value; the pressure and the acids hastening a result that the ordinary agencies of the atmosphere would take centuries to produce.